REMARKS

Claim 1 has been amended to (i) delete the recitation "brought into contact with a steel strip," (ii) replace "at least said body" with "said body," (iii) recite "said shaft portions being made of ceramics," and (iv) recite "wherein the inner surface of said body comprises large-diameter regions on both sides and a small-diameter region in the center, and each of said shaft portions is an integral hollow cylinder having a small-diameter portion, a large-diameter portion and a flange which is sandwiched by said small-diameter portion and said large-diameter portion, an inner diameter and an outer diameter of said flange slowly expand together, said small-diameter portion and said large-diameter portion of each of said shaft portions have approximately the same thickness, and the large-diameter region of said body is connected to the large-diameter portion of said shaft portion." Support for amended Claim 1 can be found at, for example, paragraphs [0021], [0047] and [0071], Fig. 1(a) and Claim 5. Claim 5 has been canceled. Claims 6 and 7 have been amended to depend from Claim 1. Claims 9-12 have been amended to correct antecedent basis issues. Upon entry of this Amendment, which is respectfully requested, Claims 1-4 and 6-12 will be pending.

Response to Claim Objection

Claim 5 has been objected to because of an informality.

Claim 5 has been canceled, rendering the objection moot. Accordingly, withdrawal of the objection is respectfully requested.

Response to Claim Rejections Under §112

Claims 1 and 5-12 have been rejected under 35 U.S.C. §112, second paragraph, as assertedly being indefinite.

(a) Regarding Claim 1, the Examiner asserts that the limitation of comprising a "hollow body brought into contact with a steel strip" is confusing and unclear as to whether Applicants are claiming a roller with the claimed structure or an assembly of a roller with a strip of steel material.

The recitation "hollow body brought into contact with a steel strip" has been deleted. Accordingly, withdrawal of the rejection is respectfully requested.

In addition, Claims 9-12 have been amended to correct antecedent basis issues. Accordingly, withdrawal of the rejection is respectfully requested.

Response to Claim Rejections Under §§102/103

(a) Claim 1 has been rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent Application Publication No. 2002/0164475 to Imamura et al. or, in the alternative, under 35 U.S.C. §103(a) as allegedly being obvious over Imamura in view of JP 2002286397 to Hamayoshi;

(b) Claims 1, 5 and 7-12 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,589,048 to Kass et al. in view of Imamura and JP '397; and

(c) Claim 6 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kass in view of Imamura et al. and JP '397, and further in view of JP 04017928 to Tanaka et al.

Applicants respectfully traverse.

The present claims are directed to a roll for use in a galvanizing pot, comprising a hollow body and shaft portions connected to the body, the body being made of a silicon nitride ceramic having thermal conductivity of 50 W/(m·K) or more at room temperature, the body having an average surface roughness Ra of 1-20 μm, and the shaft portions being made of ceramics, wherein the inner surface of the body comprises large-diameter regions on both sides and a small-diameter region in the center, and each of the shaft portions is an integral hollow cylinder having a small-diameter portion, a large-diameter portion and a flange which is sandwiched by the small-diameter portion and the large-diameter portion, an inner diameter and an outer diameter of the flange slowly expand together, the small-diameter portion and the large-diameter portion of each of the shaft portions have approximately the same thickness, and the large-diameter region of the body is connected to the large-diameter portion of the shaft portion. See Claim 1.

The technical feature of the present claims is that the shaft portions of the roll have a flange sandwiched by the small-diameter portion and the large-diameter portion whose inner diameter and outer diameter slowly expand together. Thus, there is no portion where the thickness rapidly changes in the shaft portions of the presently claimed roll, thereby resulting in prevention of breakage of the shaft portions.

In addition, because each of the shaft portion is an integral hollow cylinder made of ceramics, having a small-diameter portion and a large-diameter portion which have approximately the same thickness, there is no rapidly-changing thickness-portion. Thus, breakage of the shaft portion resulting from thermal stress when charged into or taken out of the

galvanizing pot can be prevented. Furthermore, because the hollow cylinder has approximately uniform thickness, the mass of the roll is reduced, thereby improving the followability of the roll to the speed change of a running steel strip.

Neither Imamura nor JP '397 discloses or suggests shaft portions of the presently claimed structure.

Kass discloses a hollow body and shaft portions having a large-diameter portion and a small-diameter portion, wherein the large-diameter portion is connected to the body. See, Fig. 4. However, the shaft portions of Kass do not have a flange, and the thickness of the large-diameter portion is much larger then that of the small-diameter portion. Thus, Kass' shaft portion has a portion of rapidly changing thickness between the large-diameter portion and the small-diameter portion.

JP '928 discloses a shaft portion having a large-diameter portion and a small-diameter portion. However, JP '928 fails to disclose or suggest a flange between the large-diameter portion and the small-diameter portion whose inner diameter and outer diameter slowly expand together.

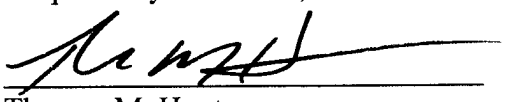
Thus, Kass, Imamura, JP '397 and JP '928 fail to render obvious the present claims. Accordingly, withdrawal of the rejections is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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